

WHAT IS CLAIMED IS:

1. An electric inter-dental brush device comprising:

a finger grip for containing a source of drive therein;

5 a housing for holding a power supply to the drive source in the finger grip, the housing being separate from the finger grip; and

a cleaning brush secured at a tip portion of the electric inter-dental brush device, the cleaning brush being powered by the source of drive.

10 2. An electric inter-dental brush device comprising:

a finger grip for containing a source of drive therein;

a housing for holding a power supply to the source of drive in the finger grip, the housing being separate from the finger grip;

a cleaning brush secured at a tip portion of the electric inter-dental brush device,

15 and

a connection member for connecting between the source of drive and the power supply for powering the cleaning brush.

3. The electric inter-dental brush device of Claim 1 wherein the source of drive

20 comprises a small-sized motor for driving the cleaning brush.

4. The electric inter-dental brush device of Claim 1 wherein the cleaning brush is freely removable from the finger grip.

5. An electric inter-dental brush device comprising:

5 a finger grip for containing a small-sized motor;

a housing for holding a battery to the small-sized motor in the finger grip, the housing being separate from the finger grip;

a cleaning brush secured at a tip portion of the electric inter-dental brush device,

an electric cord for connecting between the small-sized motor and the power supply

10 for powering the cleaning brush; and

an electric cord rewinding assembly for holding and rewinding the electric cord.

6. An electric inter-dental brush device comprising:

a finger grip for containing a small-sized motor;

15 a housing for holding an AC adaptor to the small-sized motor in the finger grip, the housing being separate from the finger grip, the AC adaptor being plugged in a household utility outlet;

a cleaning brush secured at a tip portion of the electric inter-dental brush device,

an electric cord for connecting between the small-sized motor and the AC adaptor

20 for powering the cleaning brush; and

an electric cord rewinding assembly for holding and rewinding the electric cord

the cleaning the cleaning brush being powered by the AC adaptor.

7. The electric inter-dental brush device of Claim 1 further comprising:
a suction cup for attaching the housing to a mirror or other surface of a building or structure.

5

8. The electric inter-dental brush device of Claim 1 further comprising a space in the housing for holding the cleaning brush when the brush is not in use.

9. An electric inter-dental brush device comprising:

10 a finger grip to be held by fingers of a user of the electric inter-dental brush device;
a motor contained within the finger grip;
an output section associated with the motor for providing drive force from the motor;

a head assembly holding a cleaning brush at its tip end and a brush arm connecting
15 between the output section and the cleaning brush, the head assembly being connected to the output section to convey the drive force to the cleaning brush;

a housing for holding components and parts of a power supply to the motor, the finger grip being separate from the housing;

an electric cord for connecting the power supply to the motor; and

20 an electric cord rewinding assembly secured in the housing for holding and rewinding the electric cord when the electric inter-dental brush device is not in use.

10. An electric inter-dental brush device comprising:

a finger grip to be held by fingers of a user of the electric inter-dental brush device;

a motor contained within the finger grip;

an output section associated with the motor for providing drive force from the

5 motor;

a head assembly holding a cleaning brush at its tip end and a brush arm connecting between the output section and the cleaning brush, the head assembly being connected to the output section to convey the drive force to the cleaning brush;

a housing for holding components and parts of a power supply to the motor, the

10 finger grip being separate from the finger grip;

an electric cord for connecting the power supply to the motor;

an electric cord rewinding assembly secured in the housing for holding and rewinding the electric cord when the electric inter-dental brush device is not in use;

a space in the housing for holding the cleaning brush and keeping the same dry

15 when the electric inter-dental brush device is not in use; and

a cover for protecting the space and the housing from outside.

11. An electric inter-dental brush device comprising:

a finger grip to be held by fingers of a user of the electric inter-dental brush device;

20 a head assembly connected to the finger grip, the head assembly comprising a head arm and a cleaning brush connected to the head arm;

an ultrasonic vibrator secured within the finger grip for vibrating the cleaning brush;

a power supply for powering the ultrasonic vibrator;
an electric cord for connecting the power supply to the ultrasonic vibrator;
a electric rewinding assembly for rewinding the electrical cord with capability of
adjusting the length of the cord;

5 a housing for enclosing the power supply, the housing being separate from the
finger grip;

a storage space formed into the housing; and

a detachable cover for enclosing the finger grip and the head arm as protection
against outside.

10

12. The electrical inter-dental brush of Claim 11, wherein the housing is shaped to
match the shape of the cleaning brush, including the head arm, and made detachable into
separate pieces and also to be used as one piece.

15

13. The electrical inter-dental brush device of Claim 11, wherein the head arm is
made from resin material, the resin material being permanently reshaped by pressure from
fingers and the rotational angle of the head arm being selectable or adjustable.

14. The electrical inter-dental brush device of Claim 11, wherein the cover is made
20 from water repelling resin with a hole in the center of the cover for holding the electric cord
and with slits made in a radiating pattern from the hole, acting like a shield packing.

15. The electrical inter-dental brush device of Claim 11, wherein the electric cord rewinding assembly has a waterproofed outer cover and a portion of the electric cord rewinding assembly within the housing is made detachable, while keeping electric connection between the power supply and the ultrasonic vibrator.

5

16. The electrical inter-dental brush device of Claim 11 further comprising a suction cup attached to a back side of the electric inter-dental brush device.

17. The electrical inter-dental brush device of Claim 11, further comprising a switch
10 for turning on the ultrasonic vibrator when the electric cord is pulled out of the electric cord rewinding assembly to an appropriate length, .

18. An electric inter-dental brush device comprising:

a finger grip for containing a source of drive therein;

15 a housing for holding a power supply to the drive source in the finger grip, the housing being separate from the finger grip and freely opened or closed;

a cleaning brush secured at a tip portion of the electric inter-dental brush device, the cleaning brush being powered by the source of drive; and

a switch mechanism for allowing power supply to the cleaning brush only when the
20 housing is closed and the cleaning brush is out of the housing.

19. The electric inter-dental brush device of Claim 9 wherein the output section includes a plurality of planer gears for reducing the revolution speed of the motor.